

IN THE CLAIMS

Please cancel claims 2 and 8.

Please amend claims 1, 3 and 7 as follows:

1. (previously amended) A web inspection system for detecting a plurality of web flaws of a web, the web inspection system comprising:

a plurality of smart cameras for generating a digital pixel representation of a portion of the web, each smart camera for detecting the plurality of web flaws from the digital pixel representation and for generating output data comprising a digitized image of each flaw of the plurality of web flaws and for generating flaw location data for each flaw of the plurality of web flaws;

a host computer for controlling the web inspection system and for receiving and displaying the flaw image data and the flaw location data; and

an ethernet for connecting the plurality of smart cameras to the host ~~compute~~ computer, wherein the flaw image data and the flaw location data is transmitted over the ethernet from the plurality of smart cameras to the host computer, each smart camera of the plurality of smart cameras comprises:

a line scan camera for generating the digital pixel representation of a portion of the web;

a lighting uniformity and pixel sensitivity correction means for correcting each pixel of the digital pixel representation and for providing a corrected pixel representation;

a web edge detector for detecting at least one edge of the web;

a multi-pipeline pre-processor for filtering the corrected pixel representation, the multi-pipeline preprocessor generating a prioritized data stream of potential flaws;
a run length encoder for generating location data regarding a location of each group of the potential flaws in a cross direction;
a blob detector for generating block data regarding the location of blocks of the potential flaws along a machine direction; and
an inspect/reject analyzer for determining actual flaw data from the prioritized data stream of potential flaws.

2. (canceled)

3. (third amendment) The web inspection system of claim [[2]] 1, wherein the multi-pipeline processor comprises:

- a plurality of filters for averaging the corrected pixel representation over a distance of the web along a machine direction of the web;
- a plurality of adaptive background subtraction channels connected to the plurality of filters, each adaptive background subtraction channel of the plurality of adaptive background subtraction channels producing a stream of subtracted pixel representations;
- a plurality of thresholds, each threshold of the plurality of thresholds connected to an output of an adaptive background subtraction channel of the plurality of adaptive background subtraction channels, each threshold for grouping at least a portion of the stream of subtracted

pixel representations and for producing [[an]] a thresholder group output;
and
a priority logic circuit for prioritizing the thresholder group output of each of the plurality of thresholders.

4. (previously amended) The web inspection system of claim 3, wherein the plurality of filters comprises:

a background filter;
a machine direction streak filter;
a cross direction streak filter; and
a small flaw filter.

5. (previously amended) The web inspection system of claim 3, wherein the plurality of thresholders comprises:

a single pixel flaw detector;
a uniformity detector;
a machine direction streak detector;
a cross direction streak detector; and
a small flaw detector.

6. (previously amended) The web inspection system of claim 1, wherein each smart camera of the plurality of smart cameras detects the plurality of web flaws from the digital pixel representation at a contrast approaching a signal noise level.

7. (previously amended) A method of low contrast web inspection of a web, the method comprising the steps of:

providing at least one smart camera for detecting at least one flaw on the web,
wherein detecting the at least one flaw on the web comprises the steps
of;
generating flaw image data of the at least one flaw, the flaw image data
comprising an area of pixels having a length and a width;
generating flaw location data for locating the at least one flaw on the
web; and
transmitting the flaw image data and flaw location data over an ethernet
to a host computer; and
displaying the flaw image data and flaw location data on the host computer;
and
wherein the step of generating the flaw image data and flaw location data
comprises the steps of:
generating a pixel representation of the at least a portion of the web;
correcting the pixel representation for a lighting uniformity and a pixel
sensitivity;
filtering the corrected pixel representation utilizing a plurality
of filters;
grouping the filtered corrected pixel representations to generate a
plurality of potential flaw data streams;
generating a prioritized data stream from the plurality of potential flaw
data streams;
generating cross direction location data regarding a location of the
prioritized data stream;
generating block data regarding the location of blocks of the prioritized
data stream along a machine direction; and

generating the flaw image data from the prioritized data stream of potential flaws utilizing the cross direction location data and the block data.

8. (canceled)

9. (previously canceled)

10. (previously added) A web inspection system for detecting a flaw of a plurality of possible flaws on a web, the web inspection system comprising:

at least one smart camera for generating a digitized video data stream of a flaw on a portion of the web, the at least one smart camera comprising:

a background filter for averaging the digitized video data stream over a first area of the web to generate an averaged background signal;

a machine direction streak filter for averaging the digitized video data stream over a distance of the web along a machine direction of the web to generate a filtered machine direction signal;

a cross direction streak filter for averaging the digitized video data stream over a distance of the web along a cross direction of the web to generate a filtered cross direction signal;

a first adaptive background subtraction channel for subtracting the averaged background signal from the filtered machine direction signal to generate a first pixel representation;

a second adaptive background subtraction channel for subtracting the averaged background signal from the filtered cross direction signal to generate a second pixel representation;

at least one multi-group thresholder for grouping the first and second pixel representations to generate at least two data streams of potential flaws;
and
a priority logic circuit for prioritizing the at least two data streams of potential flaws to generate the digitized video data stream of the flaw.

11. (previously added) The web inspection system of claim 10, wherein the at least one multi-group thresholder comprises:

a machine direction streak detector for detecting a narrow streak in the machine direction; and
a cross direction streak detector for detecting a narrow streak in the cross direction.

12. (previously added) The web inspection system of claim 10, further comprising:

a small flaw filter for averaging the digitized video data stream over a second area of the web to generate an averaged small flaw signal; and
a third adaptive background subtraction channel for subtracting the averaged background signal from the average small flaw signal to generate a third pixel representation; and
a small flaw detector for detecting a small block flaw from the third pixel representation.

13. (previously added) The web inspection system of claim 10, further comprising a single pixel adaptive background subtraction channel for subtracting the averaged background signal from the digitized video data stream, an output of the single pixel

adaptive background subtraction channel coupled to a single pixel flaw detector having an output of single pixel flaws.

14. (previously added) The web inspection system of claim 10, further comprising a uniformity detector having an input of the averaged background signal, the uniformity detector for outputting a block flaw signal.